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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/678,920 | 10/02/2003 | Shiow-Hwei Hwang | TNCR.210US1 | 1403 |

36257 7590 06/22/2006

PARSONS HSUE & DE RUNTZ LLP
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SAN FRANCISCO, CA 94105

EXAMINER

DETSCHER, MARISSA

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2877

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

3/4

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/678,920 | HWANG ET AL. | |
| | Examiner | Art Unit | |
| | Marissa J. Detschel | 2877 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23, 34-53 and 58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-23, 34-53, 58 is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendment filed on April 18, 2006, has been considered by the Examiner and entered.

The drawings filed with the amendment on April 18, 2006 are accepted.

Response to Arguments

Applicant's arguments with respect to claims 1-23 and 34-53 have been considered but are moot in view of the new ground(s) of rejection based on the amendments to the claims. The new grounds of rejection are indicated in the office action below with respect to new prior art under Brophy et al. (USPN 5,129,724).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Brophy et al. (USPN 5,129,724).

Regarding claim 1, Brophy discloses a method for inspecting a sample, the method comprising:

Illuminating (via 22) at least a portion of a sample (2,3) with an illumination beam (27) to generate a reflected beam;

Interfering a first reference beam and the reflected beam to generate an interference pattern;

Recording (via 7) the interference pattern; (column 3, line 56 to column 4, line 12)

Comparing the recorded interference pattern with a comparison image that is not obtained from the portion of the sample to detect differences between the recorded interference pattern and the comparison image; and

Identifying features of the sample from said differences.

The comparing of the interference pattern in Brophy's device is achieved by taking measurements of the change in height of a calibration sample of a known phase change, such as a flat glass surface (column 5, lines 1-6). This sample is not obtained from a portion of the sample to be tested. A value of the change in height of the surface for each pixel of the calibration sample is measured along with a drift between measurements (relative focus). These two measurements are combined to create a collective measurement known as Corrected for Focus Error (column 6, lines 43-67). After these measurements are taken for the calibration sample, a test sample is measured in the same way. A difference is found between these two measurements that represents a linear combination of measured phases that are in units of height. This is a function of the thickness and refractive index of the film being tested. (column 7, lines 13-30) Therefore, the features of the sample identified from these differences are the film thickness and refractive index.

In regards to claims 2 and 3, the comparing in the method of Brophy is achieved by finding a difference between the comparison image and the recorded interference pattern (column 7, lines 17-23).

Regarding claim 4, the sample used in Brophy's method comprises a film on a substrate (column 3, lines 51-56). These types of samples are known to comprise repeatable arrays of features.

In regards to claim 5, Brophy's method includes determining whether the differences between the recorded interference pattern and the comparison image exceed a predetermined threshold. This predetermined threshold is in the form of a difference between the two interference patterns being zero. If this difference is zero, then there is no film present. (column 7, lines 28-30)

Regarding claim 6, the reference beam (25) and the illumination beam (27) of Brophy have a common phase. Both these beams come from the same source (22) and are not influenced by any type of optics along their subsequent paths that would change their phases.

In regards to claim 7, the reference beam (25) of Brophy passes through a beamsplitter (24).

Regarding claim 8, the reference beam (25) and the illumination beam (27) of Brophy have a common source (22).

Regarding claim 9, the reference beam (25) of Brophy reflects from a beam splitter (24) before interfering with the first image. (column 4, lines 7-12)

Allowable Subject Matter

Claim 12-23, 34-53, and 58 are allowed.

Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claim 10, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for inspecting a sample with high aspect ratio structures by comparing a recorded interference pattern with a comparison image, in combination with the rest of the limitations of claim 10.

As to claim 12, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for inspecting a sample comprising adjusting a phase of a reference beam to adjust contrast between a first and a second portion of an interference pattern and comparing the portions of interference pattern with a comparison image that is not obtained from the portion of the sample to identify features of the sample, in combination with the rest of the limitations of claim 12.

As to claim 34, the prior art of record, taken alone or in combination, fails to disclose or render obvious a method for inspecting a sample comprising comparing a recorded interference pattern due to interference between a reflected beam and a reference beam with a comparison image that is not obtained from a portion of the sample and adjusting the phase difference between the reflected beam and the

reference beam to adjust contrast between a first and second portion of the interference pattern, in combination with the rest of the limitations of claim 34.

As to claim 45, the prior art of record, taken alone or in combination, fails to disclose or render obvious the use of a device to compare two interference patterns with a comparison image that is not obtained from a portion of the sample in an inspection apparatus for inspecting the sample comprising a reference module for providing two reference beams being out of phase with each other to interfere with a reflected beam off a sample creating the two interference patterns, in combination with the rest of the limitations of claim 45.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

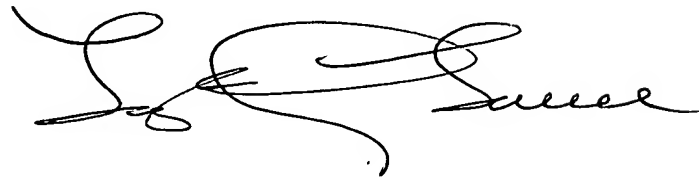
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa J. Detschel whose telephone number is 571-272-2716. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571-272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Marissa J Detschel
June 8, 2006
MJD

A handwritten signature in black ink, appearing to read 'Layla G. Laichman', with a stylized, cursive script.

LAYLA G. LAICHMAN
PRIMARY EXAMINER